CLAIMS:

1. A diversity transmitter comprising:

(a) a first processing circuitry module for transforming an input data bit stream b_i into an OFDM symbol stream and for dividing said OFDM symbol stream into a first OFDM symbol sub-stream and a second OFDM symbol sub-stream wherein said first OFDM symbol sub-stream includes only even symbols from said OFDM symbol stream and said second OFDM symbol sub-stream includes only odd symbols from said OFDM symbol stream;

(b) a second processing circuitry module, coupled to a first output of said first processing circuitry module, for further processing said first OFDM symbol sub-stream;

(c) a third processing circuitry module, coupled to said a second output of said first processing circuitry module, for further processing said second OFDM symbol sub-stream;

(d) a first antenna, coupled to an output of said second processing circuitry module, for transmitting said further processed first OFDM symbol sub-stream; and

(e) a second antenna, coupled to an output of said third processing circuitry module, for transmitting said further processed second OFDM symbol sub-stream;

wherein said first and second OFDM symbol sub-streams are transmitted over non-overlapping frequencies.

2. The diversity transmitter of Claim 1, wherein said first processing circuitry module comprises a scrambler, an FEC encoder and an interleaving and mapping module.

3. The diversity transmitter of Claim 2, wherein said interleaving and mapping module divides said OFDM symbol stream into said first OFDM symbol sub-stream and said second OFDM symbol sub-stream.

4. The diversity transmitter of Claim 1, wherein the first and second antennas are spatially separated.

5. The diversity transmitter of Claim 1, wherein said diversity transmitter operates in accordance with an IEEE 802.11a standard.

6. A diversity transmitter comprising:

means for transforming an input data bit stream b_i into an OFDM symbol stream and for dividing said OFDM symbol stream into a first OFDM symbol sub-stream and a second OFDM symbol sub-stream wherein said first OFDM symbol sub-stream includes only even symbols from said OFDM symbol stream and

said second OFDM symbol sub-stream includes only odd symbols from said OFDM symbol stream;

means for further processing said first OFDM symbol sub-stream;

means for further processing said second OFDM symbol sub-stream;

means for transmitting said further processed first OFDM symbol sub-stream; and

means for transmitting said further processed second OFDM symbol sub-stream;

wherein said first and second OFDM symbol sub-streams are transmitted over non-overlapping frequencies.

7. A method for transmitting an input symbol stream from a transmitting node in a wireless communication system, the method comprising the steps of:

(a) receiving an input data bit stream;

(b) transforming the received input data bit stream into an OFDM symbol stream comprised of even and odd symbols;

(c) dividing said OFDM symbol stream into a first symbol sub-stream including only even symbols from said OFDM symbol stream and a second symbol sub-stream including only odd symbols from said OFDM symbol stream;

(d) processing said first symbol sub-stream by a first processing block to output a first processed symbol sub-stream;

(e) processing said second symbol sub-stream by a second processing block to output a second processed symbol sub-stream;

(f) transmitting said first processed symbol sub-stream from a first diversity antenna; and

(g) transmitting said second processed symbol sub-stream from a second diversity antenna;

wherein said first and second further processed OFDM symbol sub-streams are transmitted over non-overlapping frequencies.

8. The method of Claim 6, wherein said steps (f) and (g) are performed independent of each other.

9. The method of Claim 6, wherein said step of processing said first symbol stream further comprises the steps of:

(a) performing a serial-to-parallel conversion on said first symbol sub-stream;

(b) performing an inverse fourier transform (IFFT) on an output from said step (a);

(c) performing a GI addition on an output from said step (b);

(d) performing a symbol wave-shaping on an output from said step (c); and

(e) modulating an output from said step (d).

10. The method of Claim 6, wherein said step of processing said second symbol stream further comprises the steps of:

(a) performing a serial-to-parallel conversion on said second symbol sub-stream;

(b) performing an inverse fourier transform (IFFT) on an output from said step (a);

(c) performing a GI addition on an output from said step (b);

(d) performing a symbol wave-shaping on an output from said step (c); and

(e) modulating an output from said step (d).